THE IMPACTS OF PERCEIVED TRUST AND PERCEIVED VALIDITY ON THE RELIGIOUS ELECTRONIC RESOURCE ACCEPTANCE

A'ang Subiyakto[1,*], Risa Sekarningtyas[1], Qurrotul Aini[1]
Nashrul Hakiem[2], JM Muslimin[3], Imam Subchi[4] and Abd Rahman Ahlan[5]

[1]Department of Information Systems
[2]Department of Informatics Engineering
[3]School of Postgraduate Study
[4]Department of History and Islamic Civilization
UIN Syarif Hidayatullah Jakarta
Jl. Juanda No. 95, Tangerang Selatan 15412, Banten, Indonesia
risasekar.ningtyas@mhs.uinjkt.ac.id; { qurrotul.aini; hakiem; muslimin; imam.subchi }@uinjkt.ac.id
*Corresponding author: aang_subiyakto@uinjkt.ac.id

[5]Department of Information Systems
International Islamic University Malaysia
Jl. Gombak 53100, Selangor, Malaysia
arahman@iium.edu.my

ABSTRACT. *Electronic resources (e-resources) are one of the essential tools for scholars related to the easiness, readability, affordability, and accessibility of the literature type. However, many scholars are accustomed to physical literature rather than electronic one. Thus, it may affect their academic work productivity. This study aims to predict factors influencing the religious e-resource acceptance among Muslim scholars in selected Islamic higher education institutions (IHEIs) in Indonesia. The technology acceptance model (TAM) was extended by incorporating two variables, namely perceived trust and perceived validity. Approximately 269 valid survey data were analyzed using the partial least square structural equation modeling (PLS-SEM) method. Besides the findings showing that both perceived trust and perceived validity variables affected the religious e-resource acceptance from the perspectives of the Indonesian scholar's points of view, the findings have also extended the external variable variety of TAM, in the context of the religious e-resource acceptance.*
Keywords: E-resources, Religious e-resources, TAM, Perceived trust, Perceived validity

1. **Introduction.** Nowadays, it is inevitable that e-resources are more popular rather than printed literature among scholars. It may relate to the easiness, readability, affordability, and accessibility of the digital resource [1-6]. [1-6] described that the e-resources are the electronic representation of the literature in their various types. [2,6,7] indicated that the acceptance of e-resources tends to associate with the academic productivity of scholars, including in the higher education world [8]. In the behavioral studies of technology acceptance [9-15], the use behavior of this technology product is preceded by-product use. [9-15] have also explained that TAM is affected by external variables based on the contextual aspects of technology acceptance phenomena.

The international publication reported in the year 2016 in Indonesia reported that among the 50 top universities in the country, only four of 885 IHEIs were included in the list [16]. It is one of the indications that the publication productivity ranking of academicians in IHEIs is at a low level. The academicians of the universities may tend accustomed

to physical literature rather than electronic ones. In contrast, the quality and quantity of physical resources are sufficiently available in libraries, and using an electronic version of literature is more efficient and effective [2,4,17,18]. In more detail, the quality perceptions on the religious e-resources among Muslim scholars may have influenced their acceptance to use e-resources. Religious e-resources are defined as the electronic representation of the Islamic resources, including the Holy Qur'an, books of hadiths, compilations of interpretation (Tafseer), classical scholar's novels, journals, proceedings, magazines, reports, and archives in the digital and online forms [19]. It is interesting to know factors that influence the acceptance of religious e-resources among scholars of IHEIs in Indonesia.

This study aimed to predict factors affecting religious e-resources acceptance among scholars of the four selected IHEIs in Indonesia. Besides the findings may become a practical consideration for its related parties, they can also serve as a basis for further technological acceptance studies, in terms of the external variable extension of TAM [9-14]. This article is structured within five sections. Besides the introduction section, the paper presents the research methods, results, discussion, and conclusion sections. The research method section elucidated the research model and the methodological issues of the research implementation. This section is then followed by the results of the statistical assessments in the third section. The results explanations are then compared with the previous theoretical bases in the fourth section. Lastly, the article is closed by the conclusion section.

2. **Research Methods.** We have extended TAM [9-14] by adopting the two quality constructs of the medical model study [20] (i.e., perceived validity [PVD] and perceived trust [PTR]). Further, we then adapted the extended model in the context of religious e-resource acceptance. In terms of the input-process-output (IPO) logic of information processing theory [21], PVD and PTR were assumed as the variables of the input dimension that influence the process and output dimensions (TAM). Figure 1 presents the model with six variables (i.e., PVD, PTR, perceived usefulness [PUS], perceived ease to use [PEU], intention to use [ITU], and use behavior [UBH]) with 11 hypotheses (Table 1).

The population comprised the postgraduate students and academicians in the four selected IHEIs in Indonesia. The people were selected using purposive random sampling based on their key informant characteristics [22,23]. The survey instrument was a set
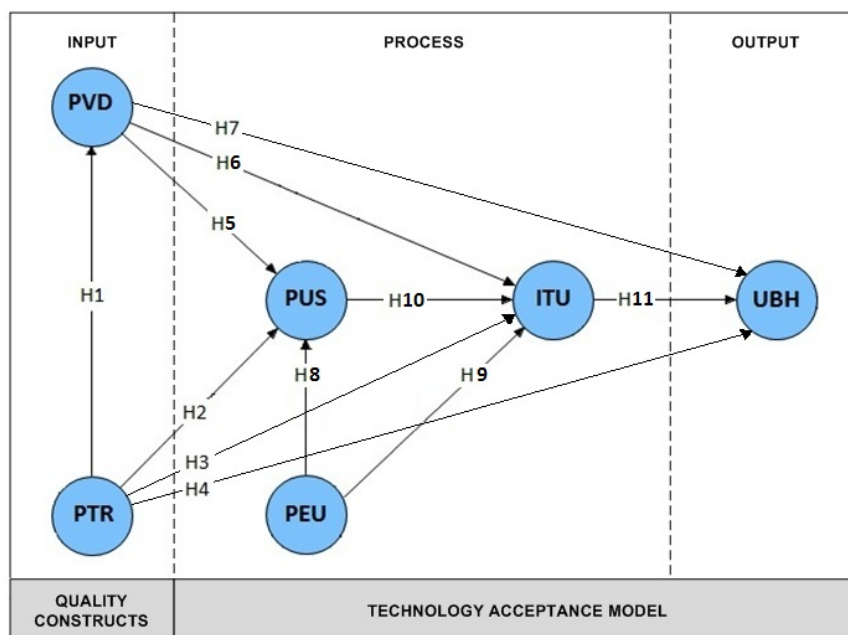

FIGURE 1. Research model

questionnaire with five respondent profile questions and 30 assessment questions using five Linkert scales. Table 2 shows the assessment questions based on each indicator definition.

TABLE 1. List of hypotheses [11-14,20]

No	Hypotheses
H1	PTR affects significantly PVD
H2	PTR affects significantly PUS
H3	PTR affects significantly ITU
H4	PTR affects significantly UBH
H5	PVD affects significantly PUS
H6	PVD affects significantly ITU
H7	PVD affects significantly UBH
H8	PEU affects significantly PUS
H9	PEU affects significantly ITU
H10	PUS affects significantly ITU
H11	ITU affects significantly UBH

TABLE 2. List of indicators and each measurement [11-14,20]

Code	Name	Measurement items
PVD1	Accuracy	E-resources present their accuracy
PVD2	Consistency	E-resources present their consistency
PVD3	Easy to describe	E-resources can be explained easily
PVD4	Psychometric	E-resources explain their reliability
PVD5	Retrievable	E-resources can be traced their sources
PTR1	Clarity	E-resources display their sources clearly
PTR2	Integrity	E-resources display their sources completely
PTR3	Systematization	E-resources display their sources systematically
PTR4	Openness	E-resources display their sources openly
PTR5	Coherence	E-resources display their sources coherently
PTR6	Data sufficiency	E-resources display their sufficient data
PUS1	Work more quickly	E-resources make work faster than without it
PUS2	Improve job performance	E-resources improve job performance
PUS3	Increase productivity	E-resources increase work productivity
PUS4	Effectiveness	E-resources increase work effectively
PUS5	Makes job easier	E-resources make work easier than without it
PUS6	Useful	E-resources have many usages
PEU1	Easy to learn	E-resources are easy to be learned
PEU2	Controllable	E-resources are easy to be controlled
PEU3	Understandable	E-resources are easy to be understood
PEU4	Flexible	E-resources are flexible to be used
PEU5	Easy to become skillful	E-resources help to become skillful
PEU6	Easy to use	E-resources are easy to be used
ITU1	Intend to use	E-resources are recommended for future use
ITU2	Use regularly	E-resources are recommended for regular use
ITU3	Recommend to use	E-resources are recommended for others
UBH1	Bad/good idea	Using e-resources is a good idea
UBH2	Foolish/wise idea	Using e-resources is a wise idea
UBH3	Preferential idea	Using e-resources is more preferable
UBH4	Unpleasant/pleasant	Using e-resources is a pleasant experience

The researchers collected around 269 valid data using an online survey. The data analysis phase was done using the PLS-SEM method with SmartPLS 2.0 [24-28]. The interpretation phase was conducted by comparing the results of the analysis phase with the theoretical bases, previous literature, and the methodological points used in [29,30].

3. **Results.** Respondents were dominated by women ($\pm 63\%$), master students with a bachelor degree ($\pm 83\%$), those with experience duration under two years using e-resources ($\pm 63\%$), knowledgeable scholars ($\pm 53\%$), and those with good IT skills ($\pm 65\%$). In the outer model assessments, PVD4 and PEU5 were eliminated because their cross-loading and composite reliability (CR) values unfulfilled the threshold assessment at least 0.7 (Table 3). Further, the validity of the rest of the 28 reliable indicators was then examined using the average variance extracted (AVE) threshold value at 0.5 or above and the cross-loading assessment of the AVE's square roots [24-28] (Table 4). These results demonstrated the psychometric property of the outer model with 28 reliable and valid indicators.

TABLE 3. Results of the measurement model assessments

| Code | Cross loadings | | | | | | CR | AVE | R^2 |
	ITU	PEU	PTR	PUS	PVD	UBH			
ITU1	0.798	0.406	0.244	0.476	0.289	0.501			
ITU2	0.835	0.387	0.260	0.360	0.236	0.484	0.866	0.684	0.340
ITU3	0.847	0.396	0.325	0.439	0.273	0.524			
PEU1	0.341	0.772	0.263	0.298	0.362	0.486			
PEU2	0.388	0.766	0.374	0.423	0.299	0.445			
PEU3	0.388	0.727	0.371	0.319	0.366	0.410	0.871	0.575	
PEU4	0.394	0.788	0.380	0.400	0.309	0.352			
PEU6	0.294	0.738	0.291	0.313	0.283	0.385			
PTR1	0.336	0.292	0.767	0.428	0.529	0.364			
PTR2	0.209	0.319	0.765	0.314	0.484	0.282			
PTR3	0.246	0.430	0.737	0.423	0.487	0.321	0.886	0.565	
PTR4	0.272	0.307	0.738	0.355	0.461	0.269			
PTR5	0.157	0.291	0.763	0.349	0.431	0.246			
PTR6	0.273	0.378	0.742	0.400	0.463	0.252			
PUS1	0.347	0.359	0.339	0.737	0.396	0.409			
PUS2	0.396	0.308	0.395	0.837	0.369	0.405			
PUS3	0.404	0.382	0.432	0.827	0.401	0.419	0.916	0.644	0.351
PUS4	0.423	0.434	0.418	0.805	0.371	0.406			
PUS5	0.384	0.403	0.433	0.812	0.365	0.425			
PUS6	0.517	0.363	0.413	0.794	0.385	0.446			
PVD1	0.201	0.365	0.491	0.406	0.817	0.374			
PVD2	0.304	0.354	0.561	0.393	0.837	0.359	0.867	0.620	0.402
PVD3	0.238	0.372	0.383	0.324	0.754	0.315			
PVD5	0.267	0.259	0.537	0.363	0.735	0.290			
UBH1	0.519	0.435	0.304	0.423	0.331	0.791			
UBH2	0.410	0.418	0.262	0.375	0.354	0.754	0.879	0.644	0.434
UBH3	0.541	0.449	0.348	0.448	0.341	0.847			
UBH4	0.472	0.450	0.322	0.423	0.348	0.815			

In the inner model assessments, the seven examinations are presented. 1) The collinearity assessment presented that the tolerance level of the collinearity among the predictor model under 0.20 with the variance inflation factor (VIF) values under the threshold of 5.00 (Table 5). 2) The coefficient determinant (R^2) presented the variance of a dependent

TABLE 4. The square roots of the AVEs

	ITU	PEU	PTR	PUS	PVD	UBH
ITU	0.827					
PEU	0.480	0.759				
PTR	0.337	0.448	0.752			
PUS	0.517	0.469	0.507	0.803		
PVD	0.322	0.427	0.634	0.474	0.787	
UBH	0.609	0.546	0.389	0.522	0.427	0.803

TABLE 5. Results of the collinearity assessments

	ITU	PEU	PTR	PUS	PVD	UBH
ITU						1.149
PEU	1.407			1.303		
PTR	1.848			1.741	1.000	1.692
PUS	1.526					
PVD	1.781			1.723		1.677
UBH						

TABLE 6. Results of the inner model assessments

	β	t-test	R^2	f^2	Q^2	q^2	Analyses					
							β	t-test	R^2	f^2	Q^2	q^2
H1	0.634	15.238	0.402	0.672	0.243	0.320	Sign	A	Mo	Lg	PR	Me
H2	0.266	3.408	0.351	0.062	0.220	0.028	Sign	A	Mo	Sm	PR	Sm
H3	0.008	0.109	0.340	0.000	0.212	(0.002)	Insig	R	Mo	Sm	PR	Sm
H4	0.083	1.283	0.434	0.007	0.277	0.003	Insig	R	Mo	Sm	PR	Sm
H5	0.192	2.676	0.351	0.030	0.220	0.016	Sign	A	Mo	Sm	PR	Sm
H6	0.017	0.230	0.340	0.000	0.212	(0.001)	Insig	R	Mo	Sm	PR	Sm
H7	0.209	3.851	0.434	0.042	0.277	0.013	Sign	A	Mo	Sm	PR	Sm
H8	0.268	4.142	0.351	0.085	0.220	0.038	Sign	A	Mo	Sm	PR	Sm
H9	0.298	4.533	0.340	0.094	0.212	0.052	Sign	A	Mo	Sm	PR	Sm
H10	0.366	5.553	0.340	0.131	0.212	0.069	Sign	A	Mo	Sm	PR	Sm
H11	0.513	11.983	0.434	0.402	0.277	0.210	Sign	A	Mo	Lg	PR	Me

Note: 1) Sign: Significant   2) Insig: Insignificant   3) A: Accepted

4) R: Rejected   5) Mo: Moderate   6) Lg: Large

7) Sm: Small   8) PR: Predict. relevance   9) Me: Medium

variable with threshold criteria of about 0.670 (substantial), 0.333 (moderate), and 0.190 and lower (weak). The results show that all R^2 values were at a moderate level (Table 6). 3) The path coefficient (β) assessment was performed using the threshold value of 0.1 or above, as a significant path. The results showed that three of the 11 paths (i.e., H3, H4, and H6) were insignificant (Table 6). 4) The effect size (f^2) assessment was conducted using the threshold values of 0.02 (small), 0.15 (medium), and 0.35 (large). The results presented two paths (H1 and H11) were the largest effect sizes among others (Table 6). 5) The hypothesis testing (t-test) was done using bootstrapping method with the threshold value of 1% (two-tailed) with three hypothesis rejections (H3, H4, and H6) (Table 6 and Figure 2). 6) The predictive relevance (Q^2) assessment was done using the blindfolding
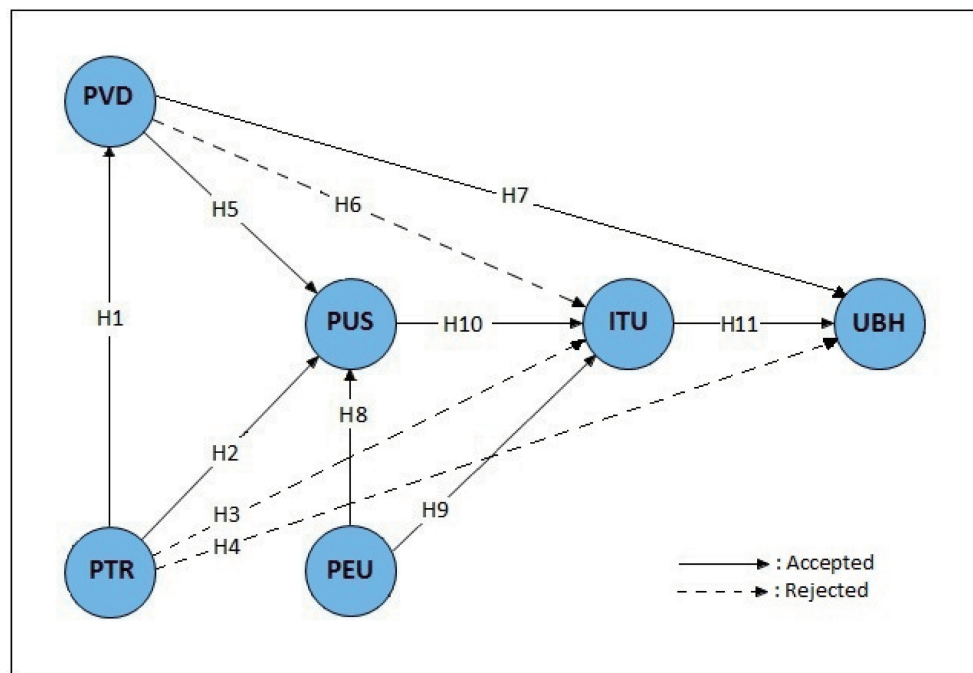
FIGURE 2. Results of the hypothetical assessment

method with a threshold above zero to justify the predictive relevance of a path (Table 6). 7) The relative impact (q^2) assessment used the blindfolding method with the threshold values being small (0.02), medium (0.15), and large (0.35). The results showed two paths (H1 and H11) had the medium impact of predictive relevance, while the rest were small ones (Table 6).

In short, the results of the outer model assessments demonstrated the psychometric property of the model with two indicator rejections (PVD4 and PEU5). It means that the assessments fulfilled the requirement of the inner model assessments referring to the PLS-SEM method studies [24-28]. The results then became the starting point of the inner model assessments. In terms of the hypothetical focus of the inner model assessments, the results presented three hypothesis rejections, i.e., H3, H4, and H6 (Figure 2).

4. **Discussion.** Referring to the results of the statistical assessments, the inner model assessments revealed the following. 1) Despite the three hypotheses (i.e., H3, H4, and H6) demonstrated their coefficient determinant at a moderate level, their effect size and relative impact were in a small level. In addition, their coefficient and t-test were also insignificant and rejected respectively. 2) Besides, H1 and H11 were the two paths with the large effect size and the medium relative impact, and the R^2 of both paths was also within a moderate level. Although it was only PVD that proved directly to affect UBH, both PVD and PTR have their indirect effects on UBH. PTR explains about 40% variances of PVD. While PVD and ITU explain 43% variance of UBH. In terms of the theoretical issues around the external variable of TAM [9-14], this study proved that both PVD and PTR variables which are adopted from [20] can be revealed as the external variables of the model in the context of the religious e-resources acceptance among scholars of IHEIs in Indonesia. Practically, the above-mentioned descriptions confirmed the quality perspectives about the validity and trust aspects of religious e-resource have influenced the digital literature acceptance among scholars of the selected IHEIs in Indonesia. Moreover, in terms of the TAM extension [9-14], the adoption of the quality constructs (i.e., PTR and PVD) [20] as the external dependent variables has added more varieties of the extension features.

5. **Conclusion.** Although the use of e-resources increased the productivity level of scientific work for students in various studies, the digital literature acceptance is also worthy of attention by the stakeholders. This is to ensure the actual use of digital resources and their benefits. In this study, the factors influencing religious e-resource acceptance were assessed using the extended TAM. The highlighted point of the findings is about the adoption of both PVD and PTR variables into TAM. Concerning the inferential assessments, both variables were statistically proven to affect the religious e-resource acceptance. The result showed that one of the causes of unproductivity in the research and publication works of the postgraduate students and academicians of the four selected IHEIs in Indonesia was due to the decision of using paper-based literature rather than the electronic learning device. It may have related to their validity and trust perceptions to use the religious e-resources. The perceptions may have influenced their behavior using the e-resource and then at the end affect academic productivity level among the sampled people. The findings of this research have presented a new theoretical perspective, in terms of the external variable variety of TAM. In the context of the religious e-resources acceptance, both PVD and PTR were the two external variables of the e-resource acceptance. The two underlined limitations of this study may have related to the data and the methodological points used in the study. The use of the different data and methodology points may present different findings. Thus, the results cannot be generalized to the other studies. Therefore, it was recommended that the data and the methodological points used in this research may be two of the consideration issues for the next studies.

REFERENCES

[1] F. Xu and J. T. Du, Examining differences and similarities between graduate and undergraduate students' user satisfaction with digital libraries, *The Journal of Academic Librarianship*, vol.45, no.6, DOI: 10.1016/j.acalib.2019.102072, 2019.

[2] M. A. Iroaganachi and R. Izuagbe, A comparative analysis of the impact of electronic information resources use towards research productivity of academic staff in Nigerian Universities, *Library Philosophy and Practice (e-Journal)*, https://digitalcommons.unl.edu/libphilprac/1702, 2018.

[3] S. S. Adona, I. A. Olarenwaju and M. M. Kpakiko, The use of electronic library resources in Nigerian Universities: A review of the literature, *International Journal of Library and Information Services (IJLIS)*, vol.8, no.2, pp.40-50, 2019.

[4] M. Sultan and M. Rafiq, Open access information resources and university libraries: Analysis of perceived awareness, challenges, and opportunities, *The Journal of Academic Librarianship*, vol.47, no.4, DOI: 10.1016/j.acalib.2021.102367, 2021.

[5] M. Kowalsky, Opportunity costs of electronic resources, *Procedia Economics and Finance*, vol.23, pp.948-952, 2015.

[6] A. K. Siwach and S. K. Malik, Use of electronic resources by science faculty and researchers in selected North Indian Universities, *Library Philosophy and Practice (e-Journal)*, https://digitalcommons.unl.edu/libphilprac/2506, 2019.

[7] A. A. Adeoye and A. O. Olanrewaju, Use of technology acceptance model (TAM) to evaluate library electronic information resources use by undergraduate students of Lead City University, Ibadan, Nigeria, *Library Philosophy and Practice (e-Journal)*, https://digitalcommons.unl.edu/libphilprac/2471, 2019.

[8] S. K. Dhillon, R. Ibrahim and A. Selamat, Factors associated with scholarly publication productivity among academic staff: Case of a Malaysian Public University, *Technology in Society*, vol.42, pp.160-166, 2015.

[9] M. Chuttur, Overview of the technology acceptance model: Origins, developments and future directions, *Working Papers on Information Systems*, vol.9, no.37, 2009.

[10] P. Godoe and T. Johansen, Understanding adoption of new technologies: Technology readiness and technology acceptance as an integrated concept, *Journal of European Psychology Students*, vol.3, no.1, 2012.

[11] N. Marangunić and A. Granić, Technology acceptance model: A literature review from 1986 to 2013, *Universal Access in the Information Society*, vol.14, no.1, pp.81-95, 2015.

[12] V. Venkatesh, J. Y. Thong and X. Xu, Unified theory of acceptance and use of technology: A synthesis and the road ahead, *Journal of the Association for Information Systems*, vol.17, no.5, pp.328-376, 2016.

[13] V. Venkatesh and F. D. Davis, A theoretical extension of the technology acceptance model: Four longitudinal field studies, *Management Science*, vol.46, no.2, pp.186-204, 2000.

[14] V. Venkatesh, M. G. Morris, G. B. Davis and F. D. Davis, User acceptance of information technology: Toward a unified view, *MIS Quarterly*, vol.27, no.3, pp.425-478, 2003.

[15] R. K. Alsoub, T. A. Alrawashdeh and A. Althunibat, User acceptance criteria for enterprise resources planning software system, *International Journal of Innovative Computing, Information and Control*, vol.14, no.1, pp.297-307, 2018.

[16] L. Lukman, Y. Yaniasih, I. Maryati, M. A. Silalahi and A. Sihombing, *The Strength of 50 Indonesian Scientific Institutions: Scopus Indexed Scientific Publication Profiles*, Directorate General of Strengthening for Research and Development, Ministry of Research, Technology and Higher Education, Jakarta, 2016.

[17] S. Ammerman, Communicating accessibility resources benefits everyone, *Nonprofit Communications Report*, vol.14, no.2, DOI: 10.1002/npcr.30327, 2016.

[18] T. Mawere and K. O. S. Sai, An investigation on e-resource utilization among university students in a developing country: A case of Great Zimbabwe University, *SA Journal of Information Management*, vol.20, no.1, DOI: 10.4102/sajim.v20i1.860, 2018.

[19] S. Thanuskodi, Use of e-resources by the students and researchers of Faculty of Arts, Annamalai University, *International Journal of Library Science*, vol.1, no.1, pp.1-7, DOI: 10.5923/j.library.2012 0101.01, 2012.

[20] D. M. Eddy, W. Hollingworth, J. J. Caro, J. Tsevat, K. M. McDonald and J. B. Wong, Model transparency and validation: A report of the ISPOR-SMDM modeling good research practices task force-7, *Value in Health*, vol.15, no.6, pp.843-850, 2012.

[21] W. S. Davis and D. C. Yen, *The Information System Consultant's Handbook: Systems Analysis and Design*, CRC Press, 2019.

[22] M. Kim and J. L. Daniel, Common source bias, key informants, and survey-administrative linked data for nonprofit management research, *Public Performance & Management Review*, vol.43, no.1, pp.232-256, 2020.

[23] M. Rungtusanatham, C. H. Ng, X. Zhao and T. S. Lee, Pooling data across transparently different groups of key informants: Measurement equivalence and survey research, *Decision Sciences*, vol.39, no.1, pp.115-145, 2008.

[24] F. Ali, S. M. Rasoolimanesh, M. Sarstedt, C. M. Ringle and K. Ryu, An assessment of the use of partial least squares structural equation modeling (PLS-SEM) in hospitality research, *International Journal of Contemporary Hospitality Management*, vol.30, no.1, pp.514-538, 2018.

[25] J. F. Hair, C. M. Ringle and M. Sarstedt, PLS-SEM: Indeed a silver bullet, *Journal of Marketing Theory and Practice*, vol.19, no.2, pp.139-152, 2011.

[26] J. Hair, An updated and expanded assessment of PLS-SEM in information systems research, *Industrial Management & Data Systems*, vol.117, no.3, pp.442-458, 2017.

[27] K. Ned, Common method bias in PLS-SEM: A full collinearity assessment approach, *International Journal of e-Collaboration (IJeC)*, vol.11, no.4, pp.1-10, 2015.

[28] N. Urbach and F. Ahlemann, Structural equation modeling in information systems research using partial least squares, *Journal of Information Technology Theory and Application (JITTA)*, vol.11, no.2, pp.5-40, 2010.

[29] V. Venkatesh, S. A. Brown and H. Bala, Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems, *MIS Quarterly*, vol.37, no.1, pp.21-54, 2013.

[30] L. Blaxter, *How to Research*, McGraw-Hill Education (UK), 2010.